

CLAIMS

What is claimed is:

1 ^{sub} B3 A method for allowing multiple types of clients to use a database application without
2 hard-coding presentation logic for each of the multiple types of clients into the
3 database application, the method comprising the steps of:
4 prior to providing data from the database application to a particular client, performing
5 the steps of:
6 converting the data that is to be transmitted from the database application to
7 the particular client into an XML output without regard to the device
8 type of the particular client; and
9 identifying the client device type of the particular client;
10 reading metadata that indicates how to convert said XML output to output for
11 said client device type; and
12 based on said metadata, converting the XML output to output for said client
13 device type; and
14 providing the output for said client device type to said particular client.

1 2. The method of Claim 1 wherein:
2 the step of reading metadata includes reading an XSL style sheet associated with said
3 client device type; and
4 the step of converting the XML output includes applying the XSL style sheet to said
5 XML output.

1 3. The method of Claim 1 wherein the step of converting the data that is to be
2 transmitted from the database application to the particular client into an XML output
3 includes converting the data based on one or more data type definition files.

1 4. The method of Claim 1 wherein:
2 the particular client is a Telnet client;
3 the Telnet client communicates with a Telnet server to request data from said database
4 application; and
5 the step of providing said output to said particular client includes the steps of
6 sending the output to said Telnet server; and
7 said Telnet server providing said output to said Telnet client.

1 5. The method of Claim 1 wherein the step of converting the data that is to be
2 transmitted from the database application includes the steps of:
3 identifying a data type to which the data corresponds;
4 identifying a data type definition associated with said data type; and
5 converting the data to XML output based on said data type definition.

1 6. The method of Claim 1 wherein the XML output includes display instruction data
2 indicating that said data is to be displayed in a first manner.

1 7. The method of Claim 6 wherein the step of converting the XML output includes the
2 step of generating output for said client device type that causes said data to be

displayed in a second manner that is different than said first manner when said client device type is not able to display said data in the first manner.

8. A method for using a database application with clients that support multiple mark-up language interpreters without hard-coding into the database application logic to support each of the multiple mark-up language interpreters, the method comprising the steps of:
- converting output of the database application to first data that conforms to a first mark-up language without regard to the type of mark-up language interpreter supported by a client to which the output is to be sent;
 - selecting, based on the type of mark-up language interpreter supported by the client to which the output is to be sent, a second mark-up language that is different than said first mark-up language;
 - converting the first data to second data that conforms to the second mark-up language;
 - and
 - sending the second data to the client.

9. The method of Claim 8 wherein the step of converting the first data to second data is performed by applying an XSL style sheet to said first data.

10. The method of Claim 8 wherein the step of sending the second data to the client includes sending the data to a server to which the client is connected through a wireless connection, and then sending the data from the server to the client over said wireless connection.

1 11. The method of Claim 8 wherein the step of converting output of the database
2 application to first data includes:
3 identifying a data type associated with said output;
4 identifying a data type definition file associated with said data type; and
5 converting said output to said first data based on rules specified in said data type
6 definition file.

1 12. A system comprising:
2 a database system;
3 a database application operatively coupled to said database system;
4 said database application including:
5 application logic that retrieves data from said database system and uses said
6 data to produce a first output in a format that is not dictated by what
7 type of client is to receive the output;
8 an XML processor that formats the first output into XML to produce second
9 output that is not dictated by what type of client is to receive the
10 output; and
11 an XSL processor that converts the second output into a third output based on
12 an XSL style sheet associated with the type of client that is to receive
13 the output.

1 13. The system of Claim 12 further comprising:
2 a plurality of servers operatively coupled to said database application;

3 said plurality of servers including at least a first server configured to provide services
4 to clients that support a first protocol and a second server configured to
5 provide services to clients that support a second protocol that is different from
6 said first protocol; and
7 a plurality of clients including a first client that interacts with said database
8 application through said first server and a second client that interacts with said
9 database application through said second server.

- 1 14. A computer-readable medium carrying instructions for allowing multiple types of
2 clients to use a database application without hard-coding presentation logic for each of
3 the multiple types of clients into the database application, the instructions including
4 instructions for performing the steps of:
5 prior to providing data from the database application to a particular client, performing
6 the steps of:
7 converting the data that is to be transmitted from the database application to
8 the particular client into an XML output without regard to the device
9 type of the particular client; and
10 identifying the client device type of the particular client;
11 reading metadata that indicates how to convert said XML output to output for
12 said client device type; and
13 based on said metadata, converting the XML output to output for said client
14 device type; and
15 providing the output for said client device type to said particular client.

- 1 15. The computer-readable medium of Claim 14 wherein:
2 the step of reading metadata includes reading an XSL style sheet associated with said
3 client device type; and
4 the step of converting the XML output includes applying the XSL style sheet to said
5 XML output.
- 1 16. The computer-readable medium of Claim 14 wherein the step of converting the data
2 that is to be transmitted from the database application to the particular client into an
3 XML output includes converting the data based on one or more data type definition
4 files.
- 1 17. The computer-readable medium of Claim 14 wherein:
2 the particular client is a Telnet client;
3 the Telnet client communicates with a Telnet server to request data from said database
4 application; and
5 the step of providing said output to said particular client includes the steps of
6 sending the output to said Telnet server; and
7 said Telnet server providing said output to said Telnet client.
- 1 18. The computer-readable medium of Claim 14 wherein the step of converting the data
2 that is to be transmitted from the database application includes the steps of:
3 identifying a data type to which the data corresponds;
4 identifying a data type definition associated with said data type; and

5 converting the data to XML output based on said data type definition.

1 19. The computer-readable medium of Claim 14 wherein the XML output includes
2 display instruction data indicating that said data is to be displayed in a first manner.

1 20. The computer-readable medium of Claim 19 wherein the step of converting the XML
2 output includes the step of generating output for said client device type that causes
3 said data to be displayed in a second manner that is different than said first manner
4 when said client device type is not able to display said data in the first manner.

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